

ISAC Meeting – March 2013

ACTION OR INFORMATION ITEM

SPONSOR (Name/Email): Edward L. Mills/elm5@cornell.edu

TOPIC: Climate change and its effects on dengue a mosquito-borne disease

SPEAKER (Name/Email): Major Lewis Long, U. S. Army

1. DESCRIPTION OF AGENDA ITEM:

45 minute talk on “Climate change and its effects on dengue a mosquito-borne disease”. Dengue is an arbovirus (arthropod-borne virus) transmitted to humans by a mosquito *Aedes aegypti* or *Aedes albopictus*. Dengue produces severe infection including a hemorrhagic fever with mortality between 3 to 15%. Dengue in the last 60 years has grown to a global pandemic and now characterized by the WHO as the most common arboviral infection of the subtropical and tropical areas of the world with millions infected and 100,000’s of persons becoming sick and dying each year.

2. WHY IS THIS ITEM IMPORTANT TO NISC / ISAC? HOW IS IT RELATED TO THE NATIONAL INVASIVE SPECIES MANAGEMENT PLAN?

According to the WHO on climate change and health, Fact sheet N°266, January 2010

Climate change

Average global temperatures are likely to rise by 1.1–6.4 °C between 1990 and 2100 (21). Physical, ecological and social factors will have a complex effect on climate change. Because of this complexity, current estimates of the attributable and avoidable impacts of climate change are based on models with considerable uncertainty.

Potential risks to health include deaths from thermal extremes and weather disasters, vector-borne diseases, a higher incidence of food-related and waterborne infections, photochemical air pollutants and conflict over depleted natural resources. Climate change will have the greatest effect on health in societies with scarce resources, little technology and frail infrastructure. Only some of the many potential effects were fully quantifiable; for example, the effects of more frequent and extreme storms were excluded. Climate change was estimated to be already responsible for 3% of diarrhoea, 3% of malaria and 3.8% of dengue fever deaths worldwide in 2004. Total attributable mortality was about 0.2% of deaths in 2004; of these, 85% were child deaths. In addition, increased temperatures hastened as many as 12 000 additional deaths; however these deaths were not included in the totals because the years of life lost by these individuals were uncertain, and possibly brief.

Key facts

- Climate change affects the fundamental requirements for health – clean air, safe drinking water, sufficient food and secure shelter.
- The global warming that has occurred since the 1970s was causing over 140 000 excess deaths annually by the year 2004.
- Many of the major killers such as diarrhoeal diseases, malnutrition, malaria and dengue are highly climate-sensitive and are expected to worsen as the climate changes.

- Areas with weak health infrastructure – mostly in developing countries – will be the least able to cope without assistance to prepare and respond.
- Reducing emissions of greenhouse gases through better transport, food and energy-use choices can result in improved health.

3. PREVIOUS ACTIONS TAKEN BY NISC / ISAC ON THIS ITEM: None

4. ACTION REQUESTED OF NISC / ISAC: The issue of mosquito borne diseases, links to climate, and risks to human health need to be elevated at the U.S. national level.

5. ALTERNATIVES:

6. ATTACHMENTS: Attached is an article that makes the connection between climate and the mosquito borne disease dengue fever.